The 2026 Happy Planet Index
Methodology Paper

Equation 1: Happy Planet Index (approximate)

$$Happy\ Planet\ Index\ \approx \frac{(\,Life\ expectancy\ x\ Self-reported\ wellbeing\,)}{Ecological\ Footprint}$$

Note: The equation is approximate as it leaves out the statistical adjustments described fully in Equation 2.

In essence, to calculate Happy Planet Index (HPI) scores, we began by multiplying the mean life expectancy of residents of a given country by the mean self-reported wellbeing of residents in the same country, to calculate what we call 'Happy Life Years'.[1] We then divided this number by the country's Ecological Footprint per capita, to reveal the average number of 'Happy Life Years' produced per unit of demand on the natural environment from the country's residents.

[1] The combination of these two variables has been called 'happy life expectancy' (Veenhoven, R, 1996. Happy Life Expectancy: A comprehensive measure of quality-of-life in nations. *Social Indicators Research* 39:1-59). Chapter 8 of the World Happiness Report 2021 calls the same combination 'WELLBYs' (Layard, R. & Oparina, E., 2021. Living long and living well: The WELLBY approach. In J. Helliwell, R. Layard, J. Sachs, & J-E de Neve (eds) *World Happiness Report: 2021*. New York: Sustainable Development Solutions Network)

Box A: Overview of components of the Happy Planet Index

The Happy Planet Index is calculated for a given country by combining:

Life expectancy: the average number of years an infant born in that country is expected to live if prevailing patterns of age-specific mortality rates at the time of birth in the country stay the same throughout the infant's life. Life expectancy is commonly used as an overall indicator of the standard of health in a country.

Self-reported wellbeing: the average of all responses from within the population to the following question: *"Please imagine a ladder with steps numbered from zero at the bottom to 10 at the top. Suppose we say that the top of the ladder represents the best possible life for you; and the bottom of the ladder represents the worst possible life for you. On which step of the ladder do you feel you personally stand at the present time, assuming that the higher the step the better you feel about your life, and the lower the step the worse you feel about it? Which step comes closest to the way you feel?"* This measure of wellbeing, the 'Ladder of Life' is commonly used as an indicator of how people's lives are going overall.

Ecological Footprint a measure of how much area of biologically productive land and water an individual, population, or activity requires to produce all the resources it consumes and to absorb the waste it generates, using prevailing technology and resource management practices. The Ecological Footprint is usually measured in global hectares. Because trade is global, an individual or country's Footprint includes land or sea from all over the world. It includes emissions associated with individual consumption, but also emissions associated with the activities of government and business investment.

The precise formula used to calculate HPI scores requires some technical adjustments to be made, to ensure that no single component dominates overall HPI scores (see 'Calculating the Happy Planet Index scores' below).

The rest of this paper describes how data for each component of the HPI was prepared, how imputing was carried out to fill data gaps, and how the components were brought together to calculate the final HPI scores for all countries.

Components of the Happy Planet Index

This section describes in detail how each component of the HPI is calculated. The following section explains how these components are brought together into the overall HPI score for each country.

Data period

We have calculated the HPI for every year between 2006 and 2025. Table 1 shows how many countries we have data for all years.

Table 1: No. of countries for which we have calculated HPI for each year

Year	No. of countries
2006	82
2007	118
2008	121
2009	130
2010	136
2011	143
2012	143
2013	143
2014	146
2015	145
2016	144
2017	145
2018	145
2019	143
2020	115
2021	121
2022	138
2023	137
2024	137
2025	134

Life expectancy

We used estimates of life expectancy at age 0, both sexes at birth, from the UN Population Division Data Portal.[2]

Wellbeing – Ladder of life

We used data on wellbeing drawn from responses to the so-called 'Ladder of Life' question collected as part of the Gallup World Poll and gathered for the 2026 World Happiness Report.[3] The Poll asks samples of around 1,000 individuals per year[4] aged 15 or over in each of more than 150 countries the following question:

> *Please imagine a ladder with steps numbered from zero at the bottom to 10 at the top. Suppose we say that the top of the ladder represents the best possible life for you; and the bottom of the ladder represents the worst possible life for you. On which step of the ladder do you feel you personally stand at the present time, assuming that the higher the step the better*

[2] Data downloaded from United Nations - Data Portal Population Division. Accessed April 2026.

[3] Helliwell, J. F., Layard, R., Sachs, J. D., De Neve, J.-E., Aknin, L. B., & Wang, S. (Eds.). (2026). *World Happiness Report 2026*. University of Oxford: Wellbeing Research Centre. Data downloaded from World Happiness Report 2026 | The World Happiness Report. Accessed April 2026.

[4] A handful of smaller countries (e.g. Iceland and Haiti) had samples of around 500 respondents each year.

you feel about your life, and the lower the step the worse you feel about it? Which step comes closest to the way you feel?[5]

Gallup weights the responses to correct for unequal selection probability, non-responses, and to match the national demographics of each country.

Interpolating and extrapolating missing wellbeing data

The World Poll is not conducted in every country every year. Of the 2464 possible year-country data points between the years 2006 and 2025, 18% were missing. We estimated some of these from other years. If data was available for the two adjacent years, the year in between was estimated as the average of them.

Ecological Footprint

The primary variable used here was the national Ecological Footprint per capita, produced by the York University Ecological Footprint Initiative.[6] The data is available for 213 countries up until 2025.

However, on average, each year data for 40% of the countries were missing or not fully reliable. In these cases, we estimated the Ecological Footprint values using a linear model that included the following variables from the World Bank and the UN as predictors:

- Carbon dioxide (CO2) emissions excluding LULUCF per capita (t CO2e/capita)
- GDP per capita, PPP (constant 2021 international $)
- Population density (people per sq. km of land area) (log)
- Imports of goods and services (constant 2015 US$)
- Exports of goods and services (constant 2015 US$)
- Continent (categorical)
- Cold or tropic latitudes (dummies)

The model used proved to be a strong fit to the data, predicting 89.5% of variance in Ecological Footprint.

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[5] Gallup (n.d.) *Understanding How Gallup Uses the Cantril Scale* [webpage]. Retrieved from [Understanding How Gallup Uses the Cantril Scale]

[6] Data downloaded from [Data | Ecological Footprint Initiative]. Accessed April 2026.

Calculating the Happy Planet Index scores

As noted earlier, when all the components are brought together to create final HPI scores, some technical adjustments were made to ensure that no single component dominates the overall score.

We began by adjusting the wellbeing scores so that their coefficient of variance was equivalent to the coefficient of variance of the life expectancy scores. In effect, this involved adding a constant to the wellbeing score of each country (β in Equation 2 below). By doing so, we ensured that each of these two variables contribute the same amount of variance to the product term, which is 'Happy Life Years'. This can be understood as ensuring that the Happy Life Years measure is equally sensitive to changes in life expectancy and wellbeing.

An Adjusted Happy Life Years (AHLY) value (seen, for example, on Page 20 of the report) was then calculated such that a country with a self-reported wellbeing score of 7.67 (which was the highest value in 2006), would have an AHLY score equivalent to its life expectancy. For countries with lower self-reported wellbeing scores, their life expectancy was therefore adjusted downwards. But for the few countries with higher self-reported wellbeing scores, life expectancy was actually adjusted upwards. Making this adjustment is purely for communication purposes, so that a country with a good level of self-reported wellbeing can achieve an AHLY score that is similar to its life expectancy, rather than reporting HLY scores without the adjustment which will always be definition be lower than life expectancy. It made no difference to the country rankings or the final HPI score.

We then subtracted 22.5 years from this AHLY score. 22.5 is the AHLY score that would be calculated from the country with the lowest self-reported wellbeing (2.18 out of 10) and lowest life expectancy (42.9 years) during the time frame of the datasets. In effect, this means that any country that had an AHLY score of 22.5 or lower have an HPI score of 0, no matter how small its Ecological Footprint was. The produced score is called the "AHLY above min" score.

Then, we adjusted the Ecological Footprint scores so that their coefficient of variance was equivalent to that of the AHLY above min score. Again, this was done by adding a constant to the Ecological Footprint (ε in Equation 2). This can be understood as ensuring that the overall Happy Planet Index score is equally sensitive to changes in AHLY and in the Ecological Footprint.

The AHLY above min score was then divided by the adjusted Ecological Footprint. The final step was to multiply up this score (which averages at around 3.1 in 2025), such that a country that achieved a life expectancy of 85 years and a self-reported wellbeing score of 10 within the fair consumption space for the year in question would score 100 on the HPI.

Equation 2: Happy Planet Index

$$HPI = \frac{\alpha \times (Life\ Expectancy \times (Ladder + \beta) - \gamma) \times (Fair\ Consumption + \varepsilon)}{Ecological\ Footprint + \varepsilon}$$

where: $\alpha = 0.09$, $\beta = 3.99$, $\gamma = 77.25$, $\varepsilon = 7.03$ and *Fair Consumption* =1.48 (for 2025)

Excluding countries in war

According to the Uppsala Conflict Data Program, the last five years have seen the highest numbers of deaths from armed conflict since the genocide in Rwanda in 1994.[7] Using data from this programme, we calculated conflict-related deaths per capita for each year for each political entity. Since 2021, three political entities have suffered rates exceeding 1 death per 1000: Palestine (2023-2025), Ukraine (2022-2025) and Ethiopia (2021-2022). The highest rate was in Palestine in 2023, at 4.8 deaths per 1000 population.

Does it make sense to calculate an HPI score for these countries? And what about those countries that are directly responsible for the majority of those deaths? In the case of Palestine, that is Israel; in the case of Ukraine, it is Russia. Ethiopia is more complex – though there are allegations of international involvement in the conflict, it was officially a civil war.

Such conflicts present two main data and interpretation challenges for the HPI, both for the country where the deaths are taking place, and for the country that is directly responsible for those deaths.

Firstly, one should be cautious about any statistics collected in countries engaged in warfare, given the increased incentive for governments to manipulate such statistics, and the long-recorded restrictions on media during conflict (e.g. Emerson, 1968). Surveys may be particularly problematic in such contexts, where field researchers may be unable to access certain parts of the country, or respondents may be fearful about responding truthfully.

Secondly, the ecological footprint methodology may be strained by the cross-border ecological costs and effects of war. Whilst the methodology should theoretically capture the CO_2 emissions associated with the production and use of weaponry, these may underestimate the full impact. For example, weapons produced or purchased in previous years and then used during a war will be accounted to the previous years' footprints and not the current one. Meanwhile, the footprint does not anticipate the costs of rebuilding after the destruction caused by war. According to Neimark et al. (2026), these pre- and post-conflict emissions are the biggest environmental cost of warfare, accounting for over 95% of emissions. For example, if the total CO_2 bill of the conflict in Gaza (33.2 million tonnes CO_2) were to be attributed over the three years of the conflict (2023-2025), then it would have increased Israel's footprint by approximately 0.4 gha in each year.

[7] https://ucdp.uu.se/exploratory

With these concerns in mind, we choose to exclude the following countries from the HPI during the years of peak conflict:

- Ethiopia (2021-2022), death rates from 1.1 to 1.3 deaths per 1000 people
- Israel (2023-2025), death rates (in Palestine) from 2.6 to 4.8 deaths per 1000 people
- Palestine (2023-2025), death rates from 2.6 to 4.8 deaths per 1000 people
- Russia (2022-2025), death rates (in Ukraine) from 1.8 to 2.3 deaths per 1000 people
- Ukraine (2022-2025), death rates from 1.8 to 2.3 deaths per 1000 people

In the case of Palestine, Ecological Footprint data was unavailable during that period anyway, so the latest HPI value we have is for 2022.

We acknowledge that the threshold of 1.0 deaths per 1000 people is somewhat arbitrary. Having said that, the next highest figures were for Afghanistan which recorded death rates of between 0.7 and 0.9 deaths per 1000 people in the years 2018 to 2021. The low life expectancy and incredibly low experienced wellbeing scores (2.4 out of 10 in 2019 and 2021) however seem to suggest that the effects of the conflict in the country were being captured, at least in terms of wellbeing outcomes.

Colour-coding the results

We colour-coded world maps using a traffic light system – red, amber, and green – to give a visual representation of how each country scores on average life expectancy, average self-reported wellbeing, and per capita Ecological Footprint (see the following table for thresholds).

Table 2: Colour-codes for components

Life Expectancy	Ladder of Life (Wellbeing)	Ecological Footprint
Less than 65 years	Less than 5/10	Within fair consumption space (less than 1.48 tCO_2e per year)
65 – 75 years	5/10 – 6/10	Between 1.48 and 2.96 tCO_2e per year
75 years or more	6/10 or more	Over 2.96 tCO_2e per year

Gender differences

We calculated HPI scores for women and men separately for 11 countries for which suitable data was available: France, Germany, Estonia, Finland, Greece, Italy, Norway, Poland, Portugal, Slovenia and Turkey.

Life expectancy by sex at birth was readily available from the UN Population Division for all countries; no further calculations were necessary there. For the other two components of the HPI, however, some estimation was required.

Ecological footprint

There was no data available specifically comparing ecological footprints of women and men. Instead we used differences in carbon footprint as a proxy. Even here, data was limited.

Our main data source was the EU Horizon 2020 PS Lifestyles Project's Lifestyle Test, an online survey (https://pslifestyle.eu/) which includes questions on lifestyle and consumption which allow the estimation of carbon footprint across four consumption domains (food, living, transport, and purchases). The test is available to be completed by anyone with access to the internet, but it was particularly designed for respondents in 10 countries (Germany, Estonia, Finland, Greece, Italy, Norway, Poland, Portugal, Slovenia and Turkey) – as such sample sizes are biggest in those countries. The survey included questions on demographics, including gender, which allowed us to compare average carbon footprints between men and women.

Annual data were available for the period 2022–2025.[8] To derive estimates corresponding to the 2024 reference year, data from 2023–2025 were aggregated. Data from 2022 were excluded due to low and inconsistent participation rates across countries, while data from 2026 were excluded because they covered only a partial year.

Relative gender differences were calculated for total lifestyle carbon footprints and for individual consumption domains. For each country and domain, the gender gap was estimated as:

$$\frac{CFmen - CFwomen}{CF\ women}$$

where CF denotes the average per capita carbon footprint. Positive values indicate higher carbon footprints among men relative to women, while negative values indicate higher carbon footprints among women. The resulting estimates are presented in Table 3, which reports relative gender differences for total carbon footprints and for the food, living, transport, and purchases domains across all countries included in the analysis.

[8] Data is available for analysis at https://datastudio.google.com/u/0/reporting/acc5881d-3ea1-44de-9168-7e53b06784e5/page/sFksC

Table 3. Relative gender gap in carbon footprint by domain (men vs. women, %)

	DEU	EST	FIN	GRC	ITA	NOR	POL	PRT	SVN
Total Carbon Footprint	34 %	24 %	24 %	10 %	19 %	20 %	22 %	8 %	19 %
Food	20 %	17 %	36 %	2 %	17 %	8 %	12 %	16 %	21 %
Living	9 %	6 %	3 %	3 %	4 %	4 %	16 %	-11 %	11 %
Transport	52 %	31 %	27 %	20 %	25 %	29 %	28 %	7 %	22 %
Purchases	0 %	5 %	6 %	-7 %	-2 %	6 %	-1 %	0 %	-2 %

Note: Values represent percentage difference in carbon footprint (CF) relative to women, calculated as (CF_{men} − CF_{women}) / CF_{women}. Positive values indicate higher carbon footprint for men.

We assumed the difference in Ecological Footprints between the two genders was the same as the difference in carbon footprints. So, if men's carbon footprints are 20% higher than women's, we assume their Ecological Footprints are also 20% higher.

We assumed differences between men and women only applied to the 72% of the national ecological footprint which is associated with individual consumption patterns (Hertwich & Peters, 2009). We assumed that the remaining 28%, which is mostly attributable to government spending and investment, can be attributed equally to women and men.

Alongside the PS Lifestyle dataset, we also found another study which reported men's carbon footprints to be 36% higher than women's in France (Berland & Leroutier, 2025). However, this study only considered footprints associated with two areas of consumption - food and transport. Assuming that men's *overall* footprints are 36% higher would be inappropriate, given that food and transport were the two areas where the gender differences were the starkest in the PS Lifestyle dataset. Instead, we estimated a regression model with overall gender difference as the dependent variable, and the food gender difference and transport gender difference as the two predictor variables. This model allowed us to estimate that the overall carbon footprint for men in France was 29% higher than for women, which is slightly smaller than the gender difference in Germany (34% higher).

Self-reported wellbeing

Averages for men and women from the Gallup World Poll were not publicly available. Instead, we used data from Round 11 of the European Social Survey (2023). The survey includes a question on life satisfaction and demographic breakdowns are possible using the ESS Data Portal.[9] We assumed that the difference between men and women's scores on life satisfaction (as a ratio) was the same as the difference between men and women's scores on the question on self-reported wellbeing in the Gallup World Poll.

[9] https://ess.sikt.no/en/

The one country (of the 11 included in this analysis) for which ESS data was not available was Turkey. Fortunately, we were provided with another data source which included life satisfaction, the national Life Satisfaction Survey (Türkiye Istatistik Kurumu, 2026).[10]

Calculating HPI

HPI scores for men and women in these 11 countries were calculated using exactly the same formula as the national average scores, meaning that the scores are directly comparable.

Women's leadership

In this section of the report, a regression analysis was performed. The analysis covers the period from 2006 to 2024 and includes data from 148 countries. The independent variable of interest was the Gender of the Chief Executive (see below). We controlled for a democracy index, the share of women in parliament, log population, log GDP per capita, country fixed effects, and year fixed effects. Errors are clustered by country. The following table shows the list of all the variables included in the model together with their respective sources.

Table 4: Variables and sources in the regression analysis of women's leadership

Variable	Source
Gender of the Chief Executive	V-Dem & Our World in Data: Gender of the chief executive, 2025
Share of female representation in the lower chamber of parliament	V-Dem & Our World in Data: Share of women in parliament, 2025
Democracy Index	Economist Intelligence Unit: Democracy Index, 2024
Population (log)	UNPD
GDP pc (log)	World Bank

The model included a total of 2,442 observations and achieved a within R-squared of 0.21, indicating that it explained approximately 21% of the within-entity variation in the dependent variable. The coefficient for the gender of the chief executive was 0.60 ($p = 0.014$), suggesting that female leadership is associated with an increase of approximately 0.6 points in the HPI, holding all other variables constant. Aside from the year fixed effects, no other variables were significant.

[10] Our thanks to Dr. Devrim Dumludağ of Marmara University for highlighting this data to us and helping with translation.

Table 5: Results of the FE regression of women's leadership on the HPI

Variable	HPI
Woman chief executive	0.598** (0.240)
log GDP per capita	-0.515 (1.484)
log Population	1.133 (1.852)
Female representation	0.004 (0.023)
Democracy	-0.130 (0.277)
Year fixed effects (ref.: 2006)	
2007	0.729** (0.334)
2008	0.815** (0.360)
2009	1.931*** (0.392)
2010	1.600*** (0.404)
2011	2.064*** (0.436)
2012	1.897*** (0.478)
2013	2.089*** (0.486)
2014	2.405*** (0.537)
2015	2.489*** (0.569)
2016	2.809*** (0.598)
2017	3.029*** (0.643)
2018	3.471*** (0.693)
2019	3.671*** (0.769)
2020	3.590*** (0.822)
2021	2.391*** (0.894)
2022	3.403*** (0.871)
2023	4.648*** (0.869)
2024	5.031*** (0.891)
Constant	38.119 (25.828)
Observations	2,442
Countries	148
R^2 (within)	0.213

*Notes: Robust standard errors, clustered by country, in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Estimated using fixed-effects regression with country as the panel group variable.*